

3. The method of photoeradication of cells of claim 1 wherein the wavelength ranges from about 600 nm to about 700 nm.

4. (amended). The method of photoeradication of cells of claim 1 wherein the photosensitizing [dye] agent is methylene blue.

5. The method of photoeradication of cells of claim 4 wherein a concentration range of the methylene blue is from about 5 µg/ml to about 100 µg/ml.

6. The method of photoeradication of cells of claim 1 wherein the application of the concentration is a topical application.

7. (amended) The method of photoeradication of cells of claim 1 wherein the surfactant [is either polymixin B or SDS, or combinations thereof] includes a combination of different surface acting agents.

8. (amended) The method of photoeradication of cells of claim 1 wherein the application of the concentration is achieved via one or more of the group containing an intravenous injection, an [intratumor] injection proximate the area of cell activity, a topical administration, a subcutaneous injection, and [a peritumoral] an injection within the area of cell activity.

9. (amended) A photodynamic therapy treatment kit comprising:

a volume of a concentration including a combination of a surfactant and a photosensitizing [dye compound] agent; and

a light emitting treatment device configured to emit light [at wavelengths ranging from about 450nm to about 850nm; to provide a dosage rate ranging from about 0 to about 150 mw/cm² and a light dose ranging from 0 to about 300 J/cm²].

10. (amended) A method of treatment comprising:

providing one or more cells;

disposing a concentration in proximity to the one or more cells, said concentration including a combination of a surfactant and a photosensitizing [dye compound] agent on the one or

more cells, said surfactant disorienting a cell membrane, so that said cell membrane no longer functions as an effective osmotic barrier; and

applying a light in proximity to the one or more cells, [said light having a wavelength ranging from about 450nm to about 850nm; a dosage rate ranging from about 0 to about 150 mw/cm²; and a light dose ranging from 0 to about 300 J/cm²,] wherein the combination of the light and the surfactant and the [dye compound is adapted to cause intracellular enzyme deactivation] photosensitizing agent causes disruption of the one or more cells.

AI 11. (amended) The method of treatment of claim 10 wherein the step of disposing the concentration is achieved via one or more of the group containing: an [intratumor] injection proximate to the one or more cells, an intravenous injection, a topical application, [and a peritumoral] an injection into a group of one or more cells, and a subcutaneous injection.

12. (amended) The method of treatment of claim 10 wherein the one or more cells include at least one of a microbe, a bacteria, a fungus, [a virus,] or a cancer cell.

Sub 3 13. The method of treatment of claim 10 wherein the one or more cells are gram positive or gram negative.

14. (amended) The method of treatment of claim 10 wherein the [dye compound] photosensitizing agent is at least one of methylene blue, toluidene blue, or combinations thereof, and the light is provided at a wavelength ranging from about 450nm to about 850nm; a dosage rate ranging from about 0 to about 150 mw/cm²; and a light dose ranging from 0 to about 300 J/cm².

15. (amended) The method of treatment of claim 10 wherein the [dye compound] photosensitizing agent is monomeric or dimeric.

Sub 4 16. The method of treatment of claim 10 wherein the step of providing one or more cells is associated with a sterilization procedure.

17. The method of treatment of claim 10 wherein the step of providing one or more cells is associated with treatment of an infection at a tissue site.

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18. (amended) The method of treatment of claim 10 wherein the step of [providing one or more cells includes providing one or more of a fungus or a virus or a cancer cell] applying the light in proximity to the one or more cells results in cell death.
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Please add claims 19 - 102.

19. The treatment kit according to claim 9 wherein the concentration includes more than one surfactant.
20. The treatment kit according to claim 9 wherein the concentration includes more than one photosensitizing agent.
21. The treatment kit according to claim 9 wherein the concentration includes more than one surfactant and more than one photosensitizing agent
- 508 A2 22. The treatment kit according to claim 9 wherein the light emitting treatment device is configured to emit light at wavelengths ranging from about 450nm to about 850nm; and to provide a dosage rate ranging from about 0 to about 150 mw/cm² and a light dose ranging from 0 to about 300 J/cm².
23. The method of treatment according to claim 10 wherein the combination includes more than one surfactant.
24. The method of treatment according to claim 10 wherein the combination includes more than one photosensitizing agent.
25. The method of treatment according to claim 10 wherein the combination includes more than one surfactant and more than one photosensitizing agent.

26. A method of cell disruption comprising:

providing one or more cells;

disposing a surface acting agent in proximity to the one or more cells, said surface acting agent disorienting a cell membrane so that said cell membrane no longer functions as an effective osmotic barrier;

disposing a photosensitizing agent in proximity to the one or more cells; and

applying a light in proximity to the one or more cells to cause cellular disruption of the one or more cells.

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27. The method of cell disruption of claim 26 wherein the step of disposing the surface acting agent and the step of disposing the photosensitizing agent occur simultaneously by combining the agents and disposing a combined solution in proximity to the one or more cells.

28. The method of cell disruption of claim 27 wherein the combined solution is disposed in proximity to the one or more cells via one or more of the group containing: an injection proximate the one or more cells, an intravenous injection, a subcutaneous injection, a topical application, and an injection within the one or more cells.

29. The method of cell disruption of claim 26 wherein the one or more cells are gram positive, said method further comprising the step of:
identifying a surface acting agent from among a group of surface active agents particularly reactive with gram positive cells.

30. The method of cell disruption of claim 26 wherein the one or more cells are gram negative, said method further comprising the step of:

identifying a surface acting agent from among a group of surface active agents particularly reactive with gram negative cells.

31. The method of cell disruption of claim 30 wherein the surface acting agent is polymyxin B.

32. The method of cell disruption of claim 26 wherein the one or more cells include both gram positive cells and gram negative cells, said method further comprising the step of: identifying a surface acting agent from among a group of surface active agents particularly reactive with both gram positive cells and gram negative cells.
33. The method of cell disruption of claim 32 wherein the surface acting agent is SDS.
34. The method of cell disruption of claim 26 wherein the photosensitizing agent is monomeric or dimeric.
35. The method of cell disruption of claim 26 wherein the step of providing one or more cells is associated with a sterilization procedure.
36. The method of cell disruption of claim 26 wherein the step of providing one or more cells is associated with a treatment of an infection at a tissue site.
37. The method of cell disruption of claim 26 wherein the step of providing one or more cells includes providing one or more of a microbe or a fungus or a cancer cell.
38. The method of cell disruption of claim 26 wherein the surface acting agent is an anionic surfactant.
39. The method of cell disruption of claim 26 wherein the surface acting agent is a cationic surfactant.
40. The method of cell disruption of claim 26 wherein the surface acting agent is a non-ionic surfactant.
41. The method of cell disruption of claim 26 wherein the surface acting agent is an amphoteric surfactant.
42. The method of cell disruption of claim 38 wherein the surface acting agent is SDS.
43. The method of cell disruption of claim 39 wherein the surface acting agent is polymyxin B.
44. The method of cell disruption of claim 26 wherein the step of applying light results in cell destruction.

45. The method of cell disruption of claim 26 wherein the step of disposing a surface acting agent results in an increase in only gram negative bacterial cell membrane permeability.
46. The method of cell disruption of claim 26 wherein the step of disposing a surface acting agent results in an increase in only gram positive bacterial cell membrane permeability.
47. The method of cell disruption of claim 26 wherein the step of providing one or more cells includes the step of providing a plurality of gram negative bacteria cells and a plurality of gram positive bacteria cells, and the step of disposing a surface acting agent results in an increase in both gram negative bacterial and gram positive bacterial cell membrane permeability.
48. The method of cell disruption of claim 26 wherein the step of providing one or more cells includes the step of providing a plurality of cells from among a gram negative bacteria cell, a gram positive bacteria cell, a fungal cell, and a tissue cell, and the step of disposing a surface acting agent results in an increase in cell membrane permeability of the plurality of cells.
49. A method of photodynamic disruption of cells comprising the steps of:
- identifying an area of cell activity;
- applying a concentration including a combination of a surfactant and a photosensitizing agent to the area of cell activity, said surfactant disorienting a cell membrane so that said membrane no longer functions as an effective osmotic barrier, and so that said photosensitizing agent is able to pass through the disoriented cell membrane; and
- exposing the area of cell activity to light having a light wavelength, light dosage and a light dosage rate to cause photodynamic cellular disruption.
50. The method of photodynamic disruption of cells of claim 49 wherein the step of identifying an area of cell activity includes an examination of a portion of a living body.
51. The method of photodynamic disruption of cells of claim 49 wherein the light wavelength ranges from about 400 nm to about 800 nm, the light dosage ranges from about 10 J/cm²

to about 100 J/cm² and the light dosage rate ranges from about 50 mw/cm² to about 200 mw/cm².

52. The method of photodynamic disruption of cells of claim 49 wherein the wavelength ranges from about 600 nm to about 700 nm.

53. The method of photodynamic disruption of cells of claim 49 wherein the surfactant is SDS provided in a solution having an SDS concentration range of between 0.003 % to 0.01%.

54. A method of photodynamic disruption of acellular organisms comprising the steps of:

identifying an area of acellular organism activity;

applying a concentration including a combination of a surfactant and a photosensitizing agent to the area of acellular organism activity, said surfactant disorienting an acellular organism membrane so that said membrane no longer functions as an effective osmotic barrier, and so that said photosensitizing agent is able to pass through the disoriented acellular organism membrane; and

exposing the area of acellular organism activity to light having a light wavelength, light dosage and a light dosage rate.

55. The method of photodynamic disruption of acellular organisms of claim 54, wherein the step of identifying an area of acellular organism activity includes an examination of a portion of a living body.

56. The method of photodynamic disruption of acellular organisms of claim 54, wherein the light wavelength ranges from about 400 nm to about 800 nm, the light dosage ranges from about 10 J/cm² to about 100 J/cm² and the light dosage rate ranges from about 50 mw/cm² to about 200 mw/cm².

57. The method of photodynamic disruption of acellular organisms of claim 54 wherein the wavelength ranges from about 600 nm to about 700 nm.

58. The method of photodynamic disruption of acellular organisms of claim 54 wherein the surfactant is SDS provided in a solution having an SDS concentration range of between 0.003 % to 0.01%.

59. The method of photodynamic disruption of acellular organisms of claim 54 wherein the step of identifying an area of acellular activity includes the step of identifying an area of virus activity.

A treatment protocol for a living body having cancer cells, said protocol comprising the steps of:

identifying cancer cells within the living body;

selecting a chemical agent to disrupt a membrane of the cancer cells;

administering the chemical agent to the living body, said chemical agent disorienting a cancer cell membrane so that said membrane no longer functions as an effective osmotic barrier;

administering a photosensitizing agent to the living body; and

applying a light in proximity to the cancer cells, the combination of photosensitizing agent and light resulting in disruption of the cancer cells.

61. The treatment protocol according to claim 60 wherein the chemical agent is an anionic surfactant.

62. The treatment protocol according to claim 60 wherein the chemical agent is a cationic surfactant.

63. The treatment protocol according to claim 60 wherein the chemical agent is a nonionic surfactant.

64. The treatment protocol according to claim 60 wherein the chemical agent is an amphoteric surfactant.

65. The treatment protocol according to claim 61 wherein the chemical agent is SDS.

66. The treatment protocol according to claim 65 wherein the SDS is provided in a solution having an SDS concentration greater than 0.003%.
67. The treatment protocol according to claim 60 wherein the steps of administering the chemical agent to the body and administering a photosensitizing agent to the body are achieved by providing a solution having the chemical agent and the photosensitizing agent and disposing the solution on at least a portion of the body.
- AN 68. The treatment protocol of claim 67 wherein the step of disposing the solution on at least a portion of the body includes a solution administration selected from among a group of: topical administration, intravenous administration, subcutaneous administration, administration proximate to the cancer cells, and administration within the cancer cells.
69. The treatment protocol according to claim 60 wherein the step of administering the chemical agent to the body includes the step of providing a solution having a plurality of different chemical agents.
70. The treatment protocol according to claim 60 wherein the step of administering the photosensitizing agent to the body includes the step of providing a solution having a plurality of different photosensitizing agents.
71. The treatment protocol according to claim 60 wherein the steps of administering the chemical agent and administering the photosensitizing agent to the body are achieved by providing a solution having a plurality of different chemical agents and a plurality of different photosensitizing agents and disposing the solution on at least a portion of the body.

Sub 89
72. A treatment protocol for a living body having microbial cells, said protocol comprising the steps of:

identifying microbial cells within the living body;

selecting a chemical agent to disorient a cell membrane of the microbial cell so that said membrane no longer functions as an effective osmotic barrier;

administering the chemical agent to the living body;

administering a photosensitizing agent to the living body; and

applying a light in proximity to the microbial cells, said light in combination with the photosensitizing agent to cause disruption of the microbial cells.

73. The treatment protocol according to claim 72 wherein the chemical agent is an anionic surfactant.

74. The treatment protocol according to claim 72 wherein the chemical agent is a cationic surfactant.

75. The treatment protocol according to claim 72 wherein the chemical agent is a nonionic surfactant.

76. The treatment protocol according to claim 72 wherein the chemical agent is an amphoteric surfactant.

77. The treatment protocol according to claim 73 wherein the chemical agent is SDS.

78. The treatment protocol according to claim 74 wherein the chemical agent is polymyxin B.

79. The treatment protocol according to claim 72 wherein the steps of administering the chemical agent to the living body and administering a photosensitizing agent to the body are achieved by providing a solution having the chemical agent and the photosensitizing agent and disposing the solution on at least a portion of the body.

Sub B10 80. The treatment protocol of claim 72 wherein the step of disposing the solution on at least a portion of the human body includes a solution administration selected from among a group of: topical administration, intravenous administration, subcutaneous administration, administration proximate the microbial cells, and administration within the microbial cells.

81. A method of cell disruption comprising:

providing a plurality of cells;

disposing a surface acting agent in proximity to the plurality of cells, said surface acting agent disrupting a cell membrane so that said membrane no longer functions as an effective osmotic barrier;

disposing a photosensitizing agent in proximity to the plurality of cells; and

applying a light in proximity to the one or more cells to cause disruption of the plurality of cells.

82. The method of cell disruption of claim 81 wherein the plurality of cells are particular cells from among a group containing a microbe, a bacteria, a fungus, and a cancer cell.

83. The method of cell disruption of claim 81 wherein the surface acting agent is selected with specific reference to the particular cells.

Sub B11 84. The method of cell disruption of claim 81 wherein the surface acting agent is SDS.

85. The method of cell disruption of claim 81 wherein the surface acting agent is polymyxin B.

86. The method of cell disruption of claim 81 wherein the disruption causes cell death.

SUB 87
87. A method of potentiation of photodynamic therapy of a plurality of cells, said method comprising the steps of:

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administering a surface acting agent in proximity to the plurality of cells, said surface acting agent causing a disorientation in a cell membrane so that said cell membrane no longer functions as an effective osmotic barrier;

administering a photosensitizing agent in proximity to the plurality of cells; and

applying a light in proximity to the plurality of cells, said light in combination with the photosensitizing agent causing disruption of the plurality of cells.

88. The method of photodynamic therapy potentiation of claim 87, wherein the step of administering a surface acting agent includes the step of administering a plurality of different surface acting agents to the plurality of cells.

89. The method of photodynamic therapy potentiation of claim 87 wherein the step of administering a surface acting agent includes the step of administering a solution containing a plurality of different surface acting agents.

90. The method of photodynamic therapy potentiation of claim 87 wherein the step of administering a photosensitizing agent includes the step of administering a plurality of different photosensitizing agents to the plurality of cells.

91. The method of photodynamic therapy potentiation of claim 87 wherein the steps of administering a surface acting agent and administering a photosensitizing agent are achieved by providing a solution having a plurality of different surface acting agents and a plurality of different photosensitizing agents.

Sub B13
92. A kit for potentiation of a photodynamic therapy of a pathogenic cell site, said photodynamic therapy utilizing a light source for a photodynamic cellular disruption at the pathogenic cell site, said kit comprising:

a surface acting agent adapted to be disposed in proximity to the pathogenic cell site, said surface acting agent adapted to disrupt a pathogenic cell membrane so that said membrane no longer functions as an effective osmotic barrier; and

a photosensitizing agent adapted to be disposed in proximity to the pathogen cell site and reactive with the light source to result in the photodynamic cellular disruption.

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93. The kit according to claim 92 wherein the surface acting agent and the photosensitizing agent are provided in a combined solution capable of being disposed in proximity to the pathogenic cell site.

94. The kit according to claim 92 wherein the surface acting agent and the photosensitizing agent are provided in a combined solution having a plurality of different surface acting agents and a plurality of different photosensitizing agents.

Sub B14
95. A combined solution for potentiation of a photodynamic therapy of a pathogenic cell site, said photodynamic therapy utilizing a light source for a photodynamic cellular disruption at the pathogenic cell site, said combined solution adapted to be disposed in proximity to the pathogen cell site, said solution comprising:

a surface acting agent, said surface acting agent adapted to disorientate a pathogenic cell

membrane so that said membrane no longer functions as an effective osmotic barrier; and

a photosensitizing agent, at least a portion of said solution being reactive with the light source

to result in the photodynamic cellular disruption of the pathogenic cell site.

96. The combined solution of claim 95 wherein the surface acting agent is an anionic surfactant.